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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,969	12/14/2001	Richard A. Pittner	0401-UTL-0	7314

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EXAMINER	
LI, RUIXIANG	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/016,969	PITTNER ET AL.	
	Examiner	Art Unit	
	Ruixiang Li	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,8 and 33-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8 and 33-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments, and/or Claims

On further consideration, the non-final action in Paper No. 02262004 has been vacated. The amendment filed on 07/15/2004 has been entered. Claim 45 has been amended. Claims 1, 8, and 33-54 are pending and under consideration.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Information Disclosure Statement

The Information Disclosure Statement filed on 06/01/2004 has been considered by the Examiner and a fee of $180 as set forth in §1.17(p) has been charged to the Deposit Account No. 010535.

Withdrawn Rejections

All the rejections of record are either withdrawn or replaced with the rejections set forth in this office action.

Claim Rejections under 35 USC § 112, 1st paragraph

(i) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art

to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

(ii) Claims 1, 8, and 33-54 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method comprising peripherally administering an effective amount of PYY or a PYY(3-36) to a subject, does not reasonably provide enablement for the claimed invention commensurate in scope with the claims (see below). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with the claims.

The factors considered when determining whether a disclosure satisfies enablement requirement include: (i) the quantity of experimentation necessary; (ii) the amount of direction or guidance presented; (iii) the existence of working examples; (iv) the nature of the invention; (v) the state of the prior art; (vi) the relative skill of those in the art; (vii) the predictability or unpredictability of the art; and (viii) the breadth of the claims. *Ex Parte Forman*, 230 USPQ 546 (Bd Pat. App. & Int. 1986); *In re Wands*, 858 F. 2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988).

Claims 1, 8, and 33-54 are drawn to methods comprising administering to a subject PYY or a PYY agonist. There are two key issues which are related to the scope of enablement.

First, claims 8, 33-36, 43-52, and 54 are not limited to peripherally administering PYY or

a PYY agonist. The specification (page 2) discloses and the prior art teaches that centrally administered PYY had some effects which are opposite to those described for peripherally injected PYY(3-36). PYY has been shown in the prior art to stimulate food and water intake after central administration, as noted at line 28 of page 2 of the specification. The specification, in the working examples, discloses that peripheral administration inhibits gastric acid secretion and exocrine pancreation secretion in rats (see Examples 2, 3, and 5), and body weight gain in mice (Example 6); however, it does not disclose the same effect for centrally administered PYY. Thus, one of skill in the art would not be able to practice the claimed methods commensurate in scope with the claims.

Second, claims 1, 8, 33-46, 48-54 are are drawn to methods of administering to a subject PYY or a PYY agonist. The specification defines a PYY agonist as any compound which elicits an effect of PYY to reduce nutrient availability (page 5, lines 24-25). Such agonists can comprise a polypeptide having a functional domain, an active fragment of PYY, a chemical, or a small molecule. PYY agonists may be peptide or non-peptide compounds, and may include PYY agonist analogs, which refer to any compound structurally similar to PYY that have PYY activity (page 6, lines 3-6). Thus, the claims are drawn to a method comprising administration of a genus of structurally undefined PYY agonists. However, the specification merely discloses two compounds: PYY and PYY (3-36), and fails to provide the characteristic structure that is critical for the function of PYY and fails to provide sufficient guidance on how to make such PYY

agonists. The prior art does not provide teachings for the broad genus of PYY agonists. In view of the complexity of the nature of PYY-related compounds, it is unpredictable whether a compound that is related to PYY would work in the same manner as that of PYY. For example, PYY(6-36) and PYY(13-36), when peripherally administered, do not inhibit gastric acid secretion or pancreatic exocrinesecretion (see, e.g., Yoshinaga et al., *Am. J. Physiol.* 263:G695-701, 1992). Likewise, there is also a scope of enablement issue for the genus of agonists of GLP-1, an exendin, and an amylin, which are recited in claim 51. Therefore, it would require undue experimentation for one skilled in the art to make the genus of PYY agonists and to use the claimed agonists commensurate in scope with the claims.

(iii) Claims 1, 8, 33-46, and 48-54 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

Claims 1, 8, 33-46, 48-54 are drawn to methods of administering to a subject PYY or a PYY agonist. The specification defines a PYY agonist as any compound which elicites an effect of PYY to reduce nutrient availability (page 5, lines 24-25). Such agonists can comprise a polypeptide having a functional domain, an active fragment of PYY, a chemical, or a small molecule. PYY agonists may be peptide or non-peptide compounds, and may include PYY agonist analogs, which refer to any compound structurally similar to a PYY that has PYY activity (page 6, lines 3-6). Thus, the claims are drawn to a method comprising administration of a genus of structurally undefined PYY agonists.

The specification fails to provide any critical structural feature to adequately describe the genus of PYY agonists that may be administered in the claimed method. The specification merely discloses two compounds, PYY and PYY (3-36), which are not sufficiently representative of the claimed genus of PYY agonists. There is no defined relation between function and structure of the PYY agonists. There is even no identification of any particular portion of the structure that must be conserved. Likewise, claim 51 recites GLP-1, an exendin, an amylin, and their agonists. The specification does not provide a defined relation between function and structure of the agonists. There is no identification of any particular portion of the structure that must be conserved for these agonists. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate

written description of the genus of PYY agonists and the genus of agonists of a GLP-1, an exendin, and an amylin.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of the PYY agonists, and therefore conception is not achieved until reduction to practice has occurred. Therefore, only the method of administering PYY and PYY(3-36), but not the full breadth of the claims meets the written description provision of 35 U.S.C. §112, first paragraph.

Claim Rejections under 35 USC § 112, 2nd paragraph

(i) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(iii) Claims 1, 8, 33-37, 42, 47, 51, 52, and 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8, 33-37, 47, 51, 52, and 54 recite "a PYY". The specification (page 2, lines 6 and 7) discloses that SEQ ID NO: 2 is a PYY and an alternate molecular form of PYY is PYY(3-36). It is unclear whether the term "a PYY" recited in the claims is intended to refer to only SEQ ID NO: 2 or both SEQ ID NO: 2 and PYY(3-36). For the purpose of clarity, a sequence identifier is also required to identify PYY or PYY(3-36).

Claim 42 is indefinite because it recites "wherein the PYY agonist has a higher affinity for the Y5 receptor over the Y1 receptor". It is not clear how the Y5 receptor is related to the Y2 receptor that is recited in the claim 38 from which claim 42 depends, rendering the claim indefinite.

Claim Rejections Under 35 U. S. C. § 102 (b)

(i) Claims 1, 8, 33-43, 47-49, and 52-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshinaga et al. (*Am. J. Physiol.* 263:G695-701, 1992).

Yoshinaga et al. teach a method of inhibiting pancreatic exocrine and gastric acid output comprising administering to a subject (a mongrel dog; page G695, right column, under animal preparation) 200, 400, 800 pmol/kg/h (equivalent to about 20, 40, and 80 µg/kg/day, respectively; molecular weight of PYY=4310) of peptide YY and a PYY agonist, PYY3-36 (see, e.g., Abstract, page G696, left column, Table 3, page G697). Since Yoshinaga et al. teach a method of administering to a subject the same agent (PYY or PYY agonist) in the same dose range as that of the instantly claimed method,

the intended uses and properties of the PYY or PYY agonist recited in the claims are inherent to the method taught by Yoshinaga et al. Thus, the reference of Yoshinaga et al. meets the limitations of claims 1, 8, 33-43, 47-49, and 52-54.

(ii) Claims 1, 8, 33-44, 46-50, and 52-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Morley et al (*Life Sci.* 41:2157-2165, 1987).

Morley et al. teach a method of reducing body weight by peripheral administration (subcutaneously) of peptide YY to 12-week-old mice in the amount of 0.2 ug/kg/h (equivalent to about 5 ug/kg/day) over a period of 10 days (Abstract; Figure 5; section of methods). It is also noted that PYY can be considered as a PYY agonist in view of the instant disclosure (page 5 of the specification). Since Morley et al. teach a method of administering to a subject the same agent (PYY) in the same dose range as that of the instantly claimed method, the intended uses and properties of the PYY or PYY agonist recited in the claims are inherent to the method taught by Morley et al. Thus, the reference of Morley et al. meets the limitations of claims 1, 8, 33-44, 46-50, and 52-54.

(iii) Claims 1, 8, 33-44, 46-50, and 52-54 are rejected under 35 U.S.C. 102(b) as as being anticipated by Okada et al. (*The Endocrine Society 75th Annual Meeting Prograpm & Abstract*, page 180, Abstract 520B, 1993).

Okada et al. teach a method of reducing high fat diet intake comprising peripherally administering PYY to male Sprague-Dawley rats at the doses of 1, 10, 20, and 40 nmol (equivalent to about 4.3, 43, 86, and 172 μg, respectively; molecular weight of PYY=4310). Okada et al. further teach that PYY is a satiety factor for fat meal. Assuming the body weight of the rats are 200 g to 300 g, the dose of 4.3 ug PYY administered to a rat would be about 14 to 22 ug/kg. Thus, the dosage taught by Okada et al. reads on the dose range of PYY recited by the instant claims. It is noted that PYY can be considered as a PYY agonist in view of the instant disclosure (page 5 of the specification). Since Okada et al. teach a method of administering to a subject the same agent (PYY) in the same dose range as that of the instantly claimed method, all the intended uses and properties of the PYY or PYY agonist recited in the claims are inherent to the method taught by Okada et al. et al. Thus, the reference of Okada et al. meets the limitations of claims 1, 8, 33-44, 46-50, and 52-54.

Claim Rejections Under 35 U. S. C. § 103 (a)

(i) Claims 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (*The Endocrine Society 75th Annual Meeting Prograpm & Abstract*, page 180, Abstract 520B, 1993).

Okada et al. teach a method of reducing high fat diet intake comprising peripherally administering PYY to male Sprague-Dawley rats at the doses of 1, 10, 20, and 40 nmol

(equivalent to about 4.3, 43, 86, and 172 µg, respectively; molecular weight of PYY=4310). Okada et al. further teach that PYY is a satiety factor for fat meal.

Okada et al. do not teach administering PYY to a human subject. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to administer PYY to a human subject to reduce appetite with a reasonable expectation of success in view of the teachings of Okada et al. on the rats. It is a logical and obvious step for one of skill in the art to treat a human subject after a drug is tested successfully in an animal model.

(ii) Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., as applied to claims 1, 8, 33-44, 46-50, and 52-54, in view of Naslund et al. (Int. J. Obes. Relat. Metab. Disord. 23:304-311, 1999).

Okada et al. teach a method of reducing high fat diet intake comprising peripherally administering PYY to male Sprague-Dawley rats as applied to claims 1, 8, 33-44, 46-50, respectively. Okada et al. do not teach administration of GLP-1, an exentin, an amylin or their agonists in combination with PYY.

Naslund et al. teach that intravenous infusion of GLP-1 suppresses energy intake and appetite in obese men (Abstract).

Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method taught by Okada et al. to administer GLP-1 in combination with PYY with a reasonable expectation of success. One would have been motivated to do so because GLP-1 has been clearly shown to decrease feelings of hunger and reduces energy intake as taught by Naslund et al. and the combination of GLP-1 with PYY would be expected to be successful, since they are both taught to have the same effect.

(iii) Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morley et al (*Life Sci.* 41:2157-2165, 1987), as applied to claims 1, 8, 33-44, 46-50, and 52-54, and further in view of Naslund et al. (Int. J. Obes. Relat. Metab. Disord. 23:304-311, 1999).

Morley et al. teach a method of reducing body weight by peripheral administration (subcutaneously) of peptide YY to 12-week-old mice in the amount of 0.2 ug/kg/h (equivalent to about 5 ug/kg/day) over a period of 10 days, as applied to claims 1, 8, 33-44, 46-50, and 52-54, respectively. Morley et al. do not teach administration of GLP-1, an exentin, an amylin or their agonists in combination with PYY.

Naslund et al. teach that intravenous infusion of GLP-1 suppress energy intake and appetite in obese men (Abstract).

Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method taught by Morley et al. to administer GLP-1 in combination with PYY with a reasonable expectation of success. One would have been motivated to do so because GLP-1 has been clearly shown to decrease feelings of hunger and reduce energy intake as taught by Naslund et al. The combination of GLP-1 with PYY would be expected to be successful based upon the biological activities of PYY and GLP-1, as noted above.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruixiang Li whose telephone number is (571) 272-0875. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback, can be reached on (571) 272-0961.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Brenda.Brumback@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive

information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Ruixiang Li

Ruixiang Li, Ph.D.
Examiner
November 28, 2004